

## **ABSTRACT**

A method, apparatus and network for transporting layer-2 frames, such as Ethernet MAC, ATM AAL5, and Frame Relay, over SONET, SDH, or OTN transport networks is disclosed. The method establishes “pseudo-wires” between, for example, SONET switches and directly on top of the SONET layer. The method may implement MPLS signaling protocols on traditional SONET switches for the purpose of aggregating layer-2 frames from the transport network edges, while the transport network itself is independent from IP and MPLS routing. This approach provides a number of advantages to the network carriers in terms of operation and equipment expense reduction. To enable the transport network to be independent from IP and MPLS, and avoid subsequent IP control message processing inside the networks, an edge-to-edge “tunneling” mechanism is designed to transmit control messages as a part of the SONET (or SDH or OTN) frame payload.